
CHAPTER 26: Lockout/Tagout

The *MIOSHA General Industry Safety Standards – Part 85, Lockout/Tagout* require that employers develop a lockout/tagout program to protect employees during machine and equipment servicing or maintenance where unexpected machine energization, start-up, or release of stored energy could cause injury to employees.

Energy sources include electrical, pneumatic, hydraulic, mechanical, and thermal. There may also be stored energy—residual energy—that may remain once the primary energy source is shut down. Stored energy may result from steam, air pressure, water pressure, compression of springs, or gravity.

Printing industries, like other establishments, may perform servicing and maintenance of equipment or contract with an outside contractor to perform these functions. Either way, it is mandatory that all workers understand that a potentially dangerous condition exists when a machine is being serviced and that the people who normally operate the equipment are aware of the servicing activity.

The lockout/tagout standard does not apply to normal production operations and to maintenance work on cord- and plug-connected electrical equipment for which exposure to the hazards of unexpected energization or start-up of the equipment can be controlled by unplugging the equipment from the energy source. The plug must be under the exclusive control of the employee performing the maintenance, however.



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26.1 Employer Responsibility

MIOSHA requires that you plan for the control of energy during servicing and/or maintenance of machines and equipment by doing the following:

- Establish an energy control program;
- Develop, document, and utilize lockout/tagout procedures;
- Conduct periodic inspections;

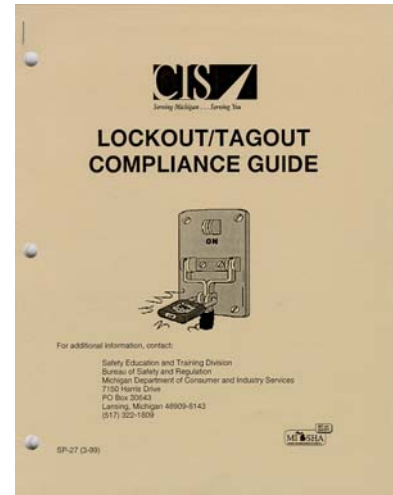
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- Provide appropriate training to employees; and
- Provide equipment required by the lockout/tagout procedures, at no cost to employees.

26.2 Lockout/Tagout Program

Your lockout/tagout program must include documented energy control procedures, employee training and periodic inspections. This ensures that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start-up or release of stored energy could occur and cause injury, the machine or equipment will be isolated from the energy source and rendered inoperative.

Contact the Michigan Department of Consumer and Industry Services, Consultation, Education, and Training Division, at 517-322-1809, for a copy of *“Lockout/Tagout Compliance Guide”* (CET SP #27).



26.3 Lockout/Tagout Procedures

Procedures addressing how potentially hazardous energy will be controlled during machine or equipment servicing and maintenance, must be developed, documented, and used. Employers must also make sure that the established procedures are followed.

Procedures DO NOT have to be documented for a particular machine or equipment when ALL of the following eight conditions are met:

1. The machine/equipment has no potential for stored or residual energy after shutdown which would endanger an employee;
2. The machine or equipment has a single energy source that can be identified and isolated;
3. The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment;
4. The machine or equipment is isolated from that energy source and locked out during service or maintenance;
5. A single lockout device will achieve a locked out condition;
6. The lockout device is under the exclusive control of the authorized employee performing the service or maintenance;

7. The servicing or maintenance does not create hazards for other employees; and
8. The employer using the exception, has had no accidents involving the unexpected activation or energization of the machine or equipment during service or maintenance.

When a documented procedure is required, it must include the following actions and elements which must be accomplished in sequence:

1. Preparation for Shutdown

All authorized employees must know the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy, before the employee turns off a machine or equipment.

2. Machine or Equipment Shutdown

Procedures must be established for turning off or shutting down each piece of equipment. An orderly shutdown should be used to avoid additional or increased hazards to employees as a result of the equipment stoppage.

3. Machine or Equipment Isolation

Locate and operate all energy-isolating devices needed to control the energy of the machine or equipment so that the machine or equipment is isolated from the energy source.

4. Lockout or Tagout Device Application

A lockout device is defined as a device, such as a key or combination lock, that utilizes a positive means or holds an energy-isolating device in a safe position and prevents the energizing of a machine or equipment.

A tagout device is defined as a prominent warning apparatus to identify the energy-isolating device and equipment being controlled. A tag used without a lock shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock, such as opening an additional disconnecting device, removal of an isolating circuit element, blocking of a controlling switch, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

Lockout or tagout devices should be applied as follows:

- ✓ Only authorized employees should place the lockout or tagout device on each energy isolating device.
- ✓ Lockout devices need to be affixed properly so they will hold the energy-isolating devices in a “safe” or “off” position.
- ✓ Tagout devices, when used, must be placed to clearly indicate that operation or movement of energy-isolating devices from the “safe” or “off” position is prohibited.

5. Stored Energy

All possible hazardous stored or remaining energy needs to be relieved, disconnected, restrained, and otherwise rendered safe after the lockout or tagout device has been put in place.

If there is a possibility of stored energy gathering to a hazardous level, proof of isolation must be continued until the servicing or maintenance is completed or until the possibility of such energy gathering no longer exists.

6. Proof of Isolation

Before starting work on a machine or equipment that has been locked out or tagged out, the authorized employee needs to show that the machine or equipment has been isolated or de-energized.

Your documented procedure must also address how you will perform start-up once maintenance or servicing is complete. Follow this procedure to release the equipment or process from lockout or tagout:

- *Machine or Equipment*
Inspect the work area to ensure that unnecessary items have been removed and that machine or equipment parts are intact.
- *Employees*
Employees must be safely positioned or removed from the work area. Tell affected employees that the lockout or tagout devices are being removed before removing the lockout or tagout devices and before energizing machines or equipment.
- *Lockout or Tagout Device Removal*
The employee who applied the lockout or tagout device must be the person to remove the device. (If that employee is not available to remove the device, then it may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented, and incorporated into your energy control program.)

26.4 Other Requirements

26.4.1 *Outside Contractors*

Outside contractors doing maintenance or repair work on any equipment at your facility, must share their lockout/tagout procedures with all affected employees. You must also share information on your lockout/tagout procedures with the outside contractor.

26.4.2 *Group Lockout or Tagout*

There are special procedures for servicing or maintenance performed by two or more people:

- *Responsibility*
Designate one employee with primary responsibility for the project. This employee will remain responsible throughout the project.
- *Multiple Individual Locks*
Each authorized employee will place a personal lockout or tagout device on the group lockout device, group lockbox, or similar mechanism when he or she begins work. Each employee removes their device when finished working on the machine or equipment being serviced or maintained.
- *Shift or Personnel Changes*
If a shift or personnel change occurs before the maintenance or servicing is finished, one employee must be designated as responsible for the specific procedures to ensure that lockout/tagout protection is continued. This employee will provide for the orderly transfer of lockout or tagout devices between off-going and oncoming employees.

26.5 Training and Communication

The lockout/tagout requirements include training for employees based on the duties performed by the employee. Employees are categorized as:

26.5.1 Authorized Employees

An authorized employee is a person who locks out or tags out a machine or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when duties include performing servicing or maintenance while exposed to potentially hazardous energy.

Authorized employees must receive training in how to recognize a hazardous energy source, the type and extent of energy available in the workplace, as well as the methods and means necessary for energy isolation and control.

26.5.2 Affected Employees

An affected employee is one whose job requires:

- Operation or use of a machine or equipment which is being serviced or having maintenance performed under lockout or tagout; or
- Working in an area where servicing or maintenance is being performed under lockout or tagout.

Affected employees need instruction in the purpose and use of the energy control procedures.

26.5.3 Other Employees

Other employees are those classified as employees whose work operations are or may be in an area where energy control procedures may be utilized.

Other employees must be instructed about the procedure. These employees must also be aware that attempts to restart or re-energize machines or equipment which are locked out or tagged out are prohibited.

26.5.3.a Tagout Systems

When tagout systems are used, employees must be trained in the following limitations of tags:

- Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
- Tags are only warning devices placed on energy-isolating devices and do not provide the physical restraint on devices as provided by a lock.
- Once a tag is attached to an energy-isolating means, it is not to be removed without permission from the authorized person responsible for it.
- A tag should never be bypassed, ignored, or otherwise defeated.
- Tags must be legible and easily understood by all authorized employees, affected employees, and all other employees whose work operations are in or near the area.
- Tags and their means of attachment must be made of materials that will withstand the environmental conditions encountered in the work place.
- Tags must be securely attached to energy-isolating devices so that they cannot be accidentally detached during use.

26.5.3.b Employee Retraining

Authorized and affected employees must be retrained whenever the following occurs:

- A change in their job assignments;
- A change in machines, equipment or processes that present a new hazard; or
- A change occurs in the energy control procedures.

Certify that employee retraining has been completed and is kept up to date. The certification should contain each employee's name and dates of training.

26.6 Periodic Inspections

At least annually, you must conduct an inspection of the energy control procedure to make sure the procedure and the standard requirements are being followed.

26.6.1 Minor Servicing and Maintenance/Set-up Exception

Lockout/tagout requirements do not apply to minor adjustments, plating up, or servicing tasks which take place during the normal production procedures if the activities are routine, repetitive,

and integral to the use of the equipment for production. When more than one employee performs a particular servicing or maintenance operation on a machine or equipment, the servicing or maintenance generally is not considered minor in nature and the machine or equipment must be locked out.

In order for the aforementioned exception to apply, the work must be performed in a way which prevents exposure, such as by the use of special tools and/or alternative procedures that keep the employee's body out of the areas of potential contact that could cause harm.

The MIOSHA General Industry Enforcement Division will allow an exception when all the following items are met:

- The electronic safety device will only be used in minor servicing activities that are routine, repetitive, and integral to use of the equipment for production, such as plating up, blanket washing, and webbing;
- In all other instances involving repair or maintenance of the presses, a lockout procedure shall be used;
- All affected employees will be trained on the use of the "safe" system, as well as the lockout procedure;
- A written "safe" procedure has been developed and reviewed with all employees;
- The safe procedure requires that the safe or stop/safe be engaged on each machine when an employee performs any servicing on the machine; no employee is to take off a safe engagement by another employee;
- The safety controls are push buttons, located on the operating parts of the press. Sufficient push-button stations are placed so that the operator always has access to the button. The safe buttons will be of a fail-safe design and color coded;
- The safety controls, once engaged, can only be taken off at the unit where they were pushed in;
- There will also be a red stop button that stops the press regardless of speed. This stop button takes precedence over all control functions;
- The safety controls are connected to the press so that no unit of the press can be operated if only one safety control is engaged. The pushing of a safe button at any station prevents starting or moving the press from any other station;
- Where there are several units that have to be mechanically as well as electronically connected, the safety control system will be configured so that even where there is an error in connecting the units electronically or mechanically, the engaging of the safety control will prevent the start-up of the press;

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- All units will be equipped with a finger bar that stays in place at the pinch point when the operations covered by the procedure are being performed;
- Each operating unit will have a lighting system indicating that the safety control button has been engaged at that station. A second light indicates that a safety control button has been engaged on the press. A third light indicates that all safety control buttons have been disengaged and the press is ready to use;
- Each press will include a built-in audio signal that will be alternated for every other press so that two presses in immediate proximity will not have the same warning sound;
- When the inch button is pressed after all safes are taken off, the audio signal will sound, indicating that the unit is about to move. This signal will sound at least two seconds before the press will move;
- The inch buttons are designed so that in order to keep the press moving in the inch position, the inch button must be continually depressed. If the button is released, the press will stop; and
- Once the plating up or other operation is complete, the procedure will call for the employee to take off their safety control and to step out of the unit. The press will be brought up to full run speed by a designated operator at a button station where two buttons must be depressed to prevent accidental start-up.